

CLAIMS

✓ 1. A method of providing location-based services for a call in a
5 packet switched wireless communications network, the method comprising the
steps of:

10 sending a request to setup a communication channel from a first
network element to a second network element, said request having an
indication in said request indicating that the communication channel will be
used for transferring a call which requires location-based services.

2. A method as recited in claim 1, wherein said first network
element contacts a local entity which is capable of handling set calls.

15 3. The method recited in claim 2, further comprising the step of
returning an accept message from said second network element to said first
network element, said accept message acknowledging said request and
providing the address of an entity handling said call.

20 ✓ 4. The method recited in claim 2 or 3, further comprising the step
of transferring said call to said entity.

5. The method recited in claim 4, wherein said second network element
✓ selects a third network element according to said indication in said request.

✓ 6. The method recited in claim 5, wherein data traffic on said communication
5 channel is filtered according to filtering information set by said second network element
or said third network element.

✓ 7. The method recited in claim 4, wherein the second network element sends a
request to start location measuring when receiving said request from said first network
10 element.

✓ 8. The method recited in claim 7, wherein the request is a SM Service
Request.

15 ✓ 9. The method recited in claim 4, wherein said second network element
sends a request to setup said communication channel to a third network element.

✓ 10. The method recited in claim 9, wherein said third network client gets a
traffic flow template (TFT) as filtering information in response to said request to setup
20 said communication channel.

✓ 11. The method recited in claim 10, wherein said third network element is a
Gateway GPRS Support Node (GGSN).

✓ 19. The method recited in claim 7, wherein the request is an Activate
Emergency PDP Context Request.

✓ 20. The method recited in claim 4, wherein said first network element sends
5 location information to said entity handling said call.

21. The method of claim 20, wherein said location information is Service Area
Identification (SAI), Routing Area Identity (RAI), Cell -ID , coordinate information or
any combination of these.

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✓ 22. The method recited in claim 4, wherein said second network element
sends location information to said entity handling said call.

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✓ 23. The method recited in claim 4, wherein said entity handling said call may
request location information from a location calculation entity.

✓ 24. The method recited in claim 4, wherein said location calculating entity is a
Radio Network Controller (RNC).

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✓ 25. The method recited in claim 13, wherein a first network element generates
said request message and includes said parameter in said request message.

26. The method recited in claim 3, wherein said entity handling said call comprises a Call State Control Function (CSCF) or a Public Safety Answering Point (PSAP).

27. The method recited in claim 3, wherein said first network element sends a request to setup a secure communication channel for signaling prior to said request to setup said communication channel indicating that said call is a call requiring location-based services.

28. The method recited in claim 25, wherein said request to setup a secure communication channel for signaling is an SM Service Request.

29. The method recited in claim 26, wherein the second network element sends a request to initiate location measuring in response to said request to setup secure communication channel for signaling.

30. A packet switched wireless communication network, comprising:
a first network element; and
a second network element, said first network element generating and sending a request to setup a communication channel to said second network element, said request having an indication indicating that the communication channel will be used for transferring call related control messages to or from said first network element.

31. A packet switched wireless communication network according to claim 28, wherein said second network element is a serving GPRS support node (SGSN).

32. A packet switched wireless communication network according to claim 29, wherein said second network element is an Internet GPRS support node (IGSN).

33. A method of providing location based services for a call and routing a call from a first network element (UE) in a packet switched wireless communications network, the method comprising the steps of:

10 providing location information for the said first network element (UE) from a second network element;

sending request to setup a call from the said first network element (UE) to a third network element (CSCF), said request including the said location information for the first network element(UE);

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34. A method of claim 33, wherein the said location information is provided to the first network element (UE) from a network element (RNC) in the radio access network.

20 35. A method of claim 34, wherein the location information is provided in a RRC message.

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36. A method of claim 34, wherein the location information is broadcasted to the first network element (UE).

37. A method of claim 33, wherein the location information is forwarded to the second network element (SGSN) from a network element in the radio access network (RNC).

38. A method of claims 37, wherein the second network element (SGSN) sends the location information in an acceptance message to a request to establish a communication connection (PDP Context) for the first network element (UE) before the said request to set up a call.

39. A method of claim 38, wherein the communication connection is a PDP context and the acceptance message is the Accept PDP Context Activation message.

40. A method of claim 33, wherein the location information is provided to the first network element as a part of a positioning method.

41. The method recited in claim 33, comprising a further step of selecting an entity (PSAP) in the second network based at least in part, on the said location information included in the said request.

42. A method of claim 33, wherein the call is an emergency call.

43. A method of claim 33, wherein the second network element (SGSN) allocates a temporary PS Domain Identifier for the call.

5 44. A method of claim 43, wherein the second network element (SGSN) sends the said temporary PS Domain identifier to an entity maintaining location information (GLMC).

10 ✓ 45. A method of claim 43 or 44, wherein the said temporary PS Domain Identifier is sent from the second network element (SGSN) to the first network element (UE), from the first network element (UE) to the third network element (CSCF, PSAP) and from the third network element (CSCF, PSAP) to an entity handling emergency calls (EC).

15 ✓ 46. A method of 43, wherein the temporary PS Domain identifier is used to identify an emergency call, when an entity handling emergency calls (EC) requests location information from an entity maintaining location information (GLMC).

20 47. The method recited in claim 33, wherein said third network element is a call control local entity which is capable of handling call set up (CSCF, PSAP).

48. The method recited in claim 42, further comprising the step of returning an accept message in response to a request for an emergency call from the first network

element, said accept message acknowledging said request and providing the address of said call control entity.

49. The method recited in claim 41, further comprising the step of transferring
5 said emergency call to said selected PSAP.

50. The method recited in claim 33, wherein the second network element
(SGSN) indicates to the radio access network to start a positioning method in order to
get location estimates in response to receiving said request for a call from said first
10 network element.

51. The method recited in claim 37, wherein said second network element
requests the location information from the radio access network corresponding to the
mobile terminal in response to receiving said request for an emergency call from said first
15 network element.

52. The method recited in claim 50, wherein the location estimate obtained by
said positioning method is provided to a Gateway Mobile Location Center (GMLC).

53. The method recited in claim 51, wherein said selected PSAP obtains said
20 location estimate from said GMLC.

54. The method recited in claim 53, wherein said selected PSAP obtains said location estimate from said GMLC after the emergency call is transferred to said selected PSAP.

5 55. The method recited in claim 53, wherein the emergency call is identified using an assigned phone number when said selected PSAP obtains said location estimate from said GMLC.

10 56. The method recited in claim 47, wherein the positioning method is performed in the first network element.

57. The method recited in claim 33, wherein the first network element requests that a positioning method be started at the same time that it sends the call setup request.

15 58. A method of any one of claims 33 to 57, wherein the first network element is a user equipment(UE, MS).

59. A method of any one of claim 33 to 57, wherein the second network element is a SGSN

60. The method of any one of claims 33 to 57, wherein the said location information is Service Area Identification (SAI), Routing Area Identity (RAI), Cell-ID, coordinate information or any combination of these.

5 61. A packet switched wireless communication network, comprising:
a user equipment;
a radio access network; and
a network element, wherein location information is sent from said radio access network to said user equipment and when the user equipment sends a request for a call to
10 said network element, the request comprises said location information.

62. A packet switched wireless communication network according to claim 61, wherein said network element is a CSCF or a PSAP

15 63. A packet switched wireless communication network according to claim 62, wherein said SGSN receives said Serving Area ID and forwards said Service Area ID to said mobile terminal.

20 64. A packet switched wireless communication network according to claim 63, further comprising a call control entity receiving said Service Area ID in an emergency call setup request from mobile terminal.

65. A packet switched wireless communication network according to claim 64, wherein said call control entity has a database identifying a plurality of Public Safety Answering Points (PSAPS) and corresponding said plurality of PSAPs with Service Area IDs.

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66. A packet switched wireless communication network according to claim 64, wherein said call control entity selects a PSAP based, at least in part, on said Service Area ID.

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